

C L A I M S

1. A method of determining the authenticity of an object comprising:
 - 5 - receiving a first code,
 - determining if the object has a three-dimensional pattern of distributed particles,
 - performing a two-dimensional data acquisition for acquisition of a second code from the object,
 - 10 - determining the authenticity using the first and second codes.
2. The method of claim 1, the determination if the object has a three-dimensional pattern of distributed particles being performed by:
 - acquiring a first image of the object with a first angle of illumination,
 - 15 - acquiring a second image of the object with a second angle of illumination,
 - combining the first and second images,
 - determining if a geometrical pattern is present in the combined images.
- 20 3. The method of claim 1, wherein the determination if the object has a three-dimensional pattern of distributed particles is made by determining if the object is reflective.
4. The method of claim 3, wherein it is determined whether the objective is reflective by acquiring a first image of the object with diffused
25 illumination and acquiring a second image of the object with direct illumination and comparing a brightness of the object in the first and second images.

5. The method of claim 1, the determination if the object has a three-dimensional pattern of distributed particles being performed by:
- illuminating the object with diffused, white light,
 - detecting light reflected from the object and light transmitted through the object,
 - determining if the reflected light and the transmitted light have complimentary colours.
6. The method of claim 1, further comprising:
- acquiring an image of the object in a read position,
 - determining a dislocation of the read position with respect to a reference position by detecting of marker positions in the image,
 - performing a projective transformation of the image for compensation of the dislocation.
7. The method of claim 1, further comprising filtering of measurement data acquired by the two-dimensional data acquisition in order to provide the second code, wherein the filtering involves low pass filtering of the measurement data.
8. The method of claim 1, the first code comprising a set of random vectors and the second code being a data vector.
9. The method of claim 8, the random vectors being pseudo random, each random vector being represented by a running index, and further comprising entering a seed value for a pseudo random number generator in order to generate the random vectors on the basis of the seed value.

10. The method of claim 8, further comprising determining the signs of scalar products of each one of the random vectors and the data vector for generating a third code.
- 5 11. The method of claim 10, the third code being a check code for comparison with an authentication code.
12. The method of claim 10, the third code being a symmetric key.
13. The method of claim 12, the object belonging to a data carrier storing an encrypted file, the method further comprising decrypting the file by means of the symmetric key.
- 10 14. The method of claim 13, the first code being stored on the data carrier.
15. A computer program product for performing a method in accordance with claim 1.
- 15 16. A logic circuit operable to perform a method in accordance with claim 1.
17. An apparatus for determining the authenticity of an object comprising:
 - a receiver for receiving a first code,
 - an optical component for determining if the object has a three-dimensional pattern of distributed particles,
 - 20 - a measurement component for performing a two-dimensional data acquisition for acquisition of a second code from the object,
 - a microprocessor for determining the authenticity on the basis of the first and second codes.

18. The apparatus of claim 17, the optical component being adapted to perform the steps of:
- acquiring a first image of the object with a first angle of illumination,
 - 5 - acquiring a second image of the object with a second angle of illumination,
 - combining of the first and second images,
 - determining if a geometrical pattern is present in the combined images.
- 10 19. The apparatus of claim 17, the optical component being adapted to determine if the object is reflective.
20. The apparatus of claim 17, the optical component being adapted to determine whether the object is reflective by acquiring a first image with diffused illumination of the object and to acquire a second image with
- 15 direct illumination of the object for comparing a brightness of the object in the first and second images.
21. The apparatus of claim 17, the optical component being adapted to perform the steps of:
- illuminating the object with diffused, white light,
 - 20 - detecting light reflected from the object and light transmitted through the object,
 - determining if the reflected light and the transmitted light have complimentary colours.
22. The apparatus of claim 17, the microprocessor being adapted to perform a projective transformation in order to compensate a
- 25 dislocation of the object with respect to a reference position.

23. The apparatus of claim 17, further comprising a low pass filter for filtering the data acquired by the measurement component in order to provide the second code.
24. A method for providing a first code for use in an authentication method,
5 the method comprising:
- providing a third code,
 - acquiring a data vector from an object representing a second code,
 - determining a random vector for each one of the bits of the third
10 code on the basis of the second code to provide the first code.
25. The method of claim 24, wherein the object is an image, and further comprising scanning the image in order to obtain image data and filtering the image data to provide the data vector.
26. The method of claim 25, the filtering of the image data comprising a
15 calculation of mean values of sub-sets of the image data.
27. The method of claim 26, the sub-sets of the image data being determined by a predefined grid.
28. A computer program product for performing a method of claim 24.
29. A logic circuit operable to perform a method of claim 24.
- 20 30. An apparatus operable to perform a method of claim 24.

31. An electronic device for determining the authenticity of an object, the electronic device comprising:
- means for receiving a first code,
 - means for determining if the object has a three-dimensional pattern of distributed particles,
 - means for performing a two-dimensional data acquisition for acquisition of a second code from the object,
 - means for determining the authenticity on the basis of the first and second codes.
32. An apparatus for determining the authenticity of an object comprising:
- a receiver for receiving a first code,
 - an optical component for determining if the object has a three-dimensional pattern of distributed particles,
 - a measurement component for performing a two-dimensional data acquisition for acquisition of a second code from the object,
 - a microprocessor for determining the authenticity on the basis of the first and second codes,
- wherein the optical component is adapted to determine if the object is reflective.
33. An apparatus for determining the authenticity of an object comprising:
- a receiver for receiving a first code,
 - an optical component for determining if the object has a three-dimensional pattern of distributed particles,

- a measurement component for performing a two-dimensional data acquisition for acquisition of a second code from the object,
- a microprocessor for determining the authenticity on the basis of the first and second codes,

5 wherein the optical component is adapted to

- illuminate the object with diffused, white light,
- detect light reflected from the object and light transmitted through the object for determining if the reflected light and the transmitted light have complimentary colours.

10 34. An apparatus for determining the authenticity of an object comprising:

- a receiver for receiving a first code,
- an optical component for determining if the object has a three-dimensional pattern of distributed particles,
- a measurement component for performing a two-dimensional data acquisition for acquisition of a second code from the object,
- a microprocessor for determining the authenticity on the basis of the first and second codes,

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wherein the first code comprises a set of random vectors and the second code is a data vector, the random vectors being pseudo random, and further comprising a pseudo random number generator for generating the random vectors on the basis of a seed value.

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